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Bureau of Entomology and Plant Quarantine

TWO CONVENIENT AND EASILY STORED KNOCK-DOWN CAGES
FOR LABORATORY AND FIELD STUDIES

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During the course of the corn earworm investigations being conducted at Urbana, Ill., two simple knock-down cages were developed which could be constructed easily and inexpensively in a short time. These cages have proved so useful that description of them seems warranted.

The first cage is 12" x 12" x 12" in size and is composed of a series of frames (fig. 1) made of $\frac{3}{4}$ " x $\frac{3}{4}$ " white pine, fastened together by threepenny wire finish nails. All the frames except the front one have 14-mesh galvanized screen wire tacked on the face toward the inside of the cage. The cage proper is held together by 1- $\frac{1}{4}$ " No. 7 flat-headed wood screws; it can therefore be taken apart quickly for transportation from one locality to another or in order to save storage space during the winter months (fig. 2). The corresponding parts of separate cages are constructed alike so as to be interchangeable. The outside dimensions of the particular cage described are, as stated, 12" x 12" x 12", but the same general design may be used for cages of different dimensions.

The cage is composed of seven frames with the following sizes:

Top and bottom	2	12" x 12"
Front and back	2	12" x 10 $\frac{1}{2}$ "
Sides	2	10 $\frac{1}{2}$ " x 10 $\frac{1}{2}$ "
Door	1	10 $\frac{1}{2}$ " x 9"

In assembling the cage, two screws are placed through each of the two uprights on the front and back frames into the uprights of the side frames; two each through both the top and bottom frames into the front and back frames; and one through each side of both top and bottom frames into the side frames.

Hinges may be used to hold the door to the cage, but a cheaper and in some respects more efficient method was devised. Before the cage is assembled, two sixpenny finish nails are driven through the bottom of the front frame, 3" from each side, so that the pointed ends extend upward. Two holes are then drilled through the bottom of the door in order to allow the nails to slide through the frame and hold the bottom of the door firmly in place. By drilling downward through the top of the front pieces and part way into the top of the door, a hole is made into which an eightpenny work nail may be slid to hold the top of the door securely in place.

Materials and cost of one cage are as follows:

24 linear feet of 3/4" x 3/4" certified white pine	\$0.40
6 sq. ft. of 14-mesh galvanized screen wire @ 6½¢ per sq. ft.	.39
20 #7, 1¼" flat-head wood screws @ 5¢ per doz.	.08
Nails and tacks	<u>.02</u>
Total cost of materials	\$0.89

Labor, about 3 hours.

A second type of knock-down cage (30" x 30" x 30"), differing somewhat in some of its details, was constructed for use as a field cage (fig. 3). The chief advantage of this cage, like the one described above, is the fact that it can be easily taken apart for storage or for hauling from place to place (fig. 4). While the cost of a cage of this type is somewhat more, and greater care is required for its construction, the results obtained warranted its use. Large cages of this type which have been in use for four seasons, both in the insectary and out of doors, are still practically as good as new as a result of their being storable in a limited space when not in use.

The cage is composed of five frames made of 1" x 2" clear western white pine and covered with 14-mesh galvanized or 16-mesh copper screen wire tacked on the inner surface.

Top	1	30" x 30"
Small sides	2	28-3/8" x 28"
Large sides	2	30" x 30"

The pieces which form the frames are notched on the ends to permit easier nailing and to make the frames more rigid.

Strips of 1" quarter-round 29" long are nailed on the inner surface of each of the upright pieces of the large frames, $\frac{3}{4}$ " from the outer edge. These furnish a ledge against which the smaller frames rest when the cage is assembled. Quarter-round is also nailed in the same way completely around the inner surface of the top frame to hold it in place when the cage is in use and also to prevent escape of small insects. (See upper section of fig. 4.) Hooks and eyes are placed on the corners to hold the top to the cage.

The four frames comprising the body of the cage are held together by light $1\frac{1}{2}$ " narrow butt hinges, two on each of the four edges. In dismantling, the pins are removed from the hinges and the cage is taken apart.

Materials and cost of one cage are as follows:

50 feet of	1" x 2" clear western white pine @ 2¢ a foot	\$1.00
8	$1\frac{1}{2}$ " narrow butt hinges @ 10¢ a pair	.80
4	flat hooks with eyes @ 5¢ each	.20
28	sq. ft. of 14-mesh galvanized screen wire @ $6\frac{1}{2}$ ¢ per sq. ft.	1.82
20 feet of	quarter-round @ 1¢ a foot	<u>.20</u>
Total costs for materials		\$4.02

If 16-mesh copper wire is used, the cost will be approximately 42 cents more, or \$4.44.

Labor, about 5 hours.

With some modifications, metal could be substituted for wood in making this type of cage.



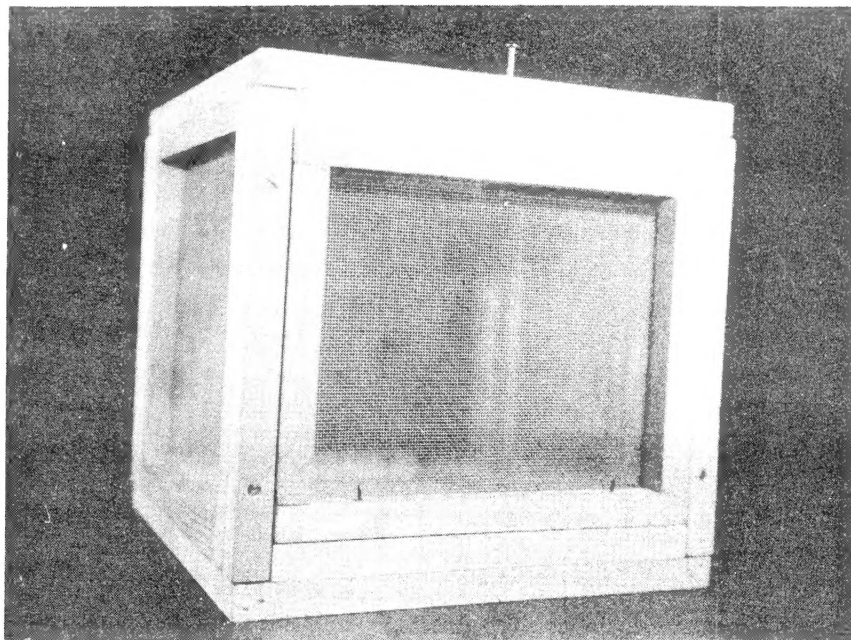


Figure 1.--Small knock-down cage ready for use.

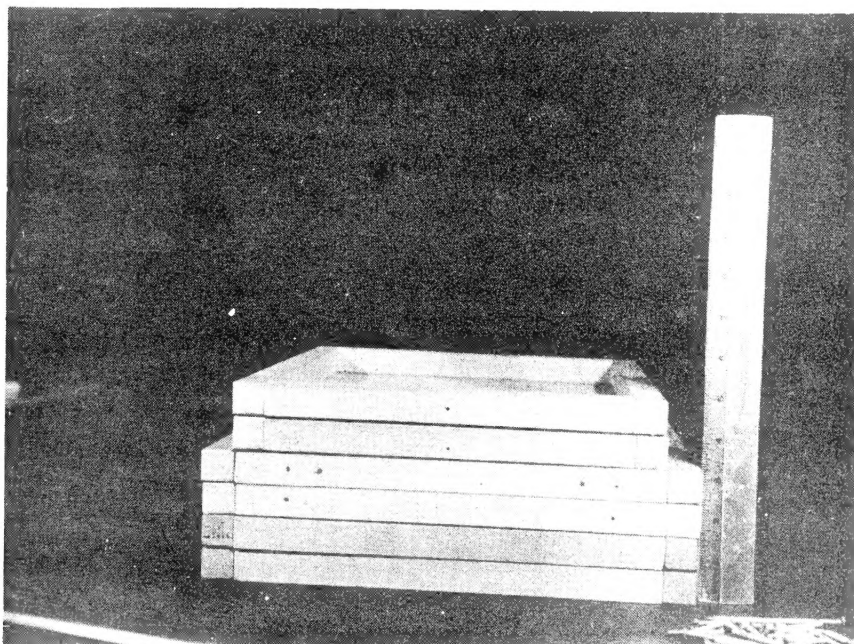


Figure 2.--Parts of small cage, assembled for transportation or storage.

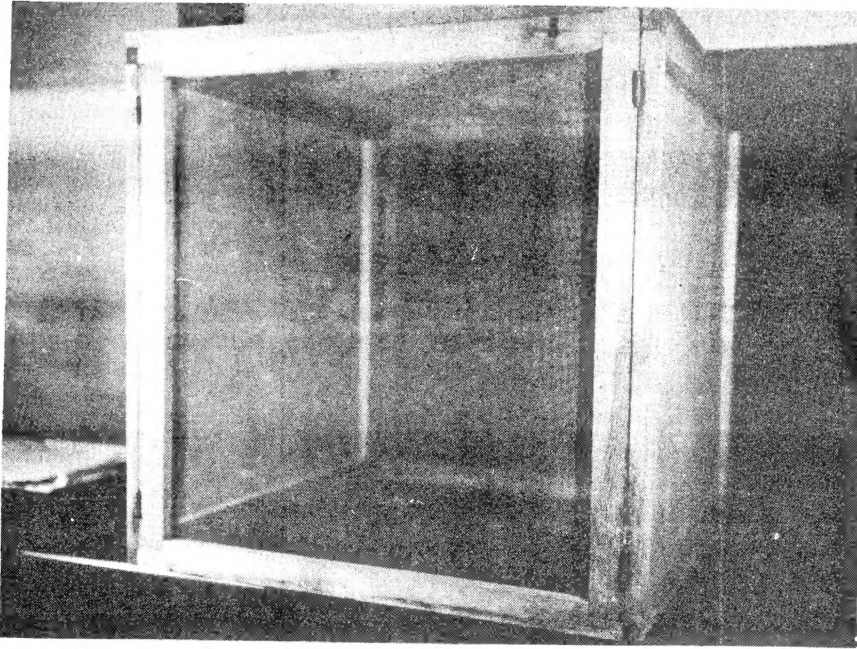


Figure 3.--Field cage ready for use.

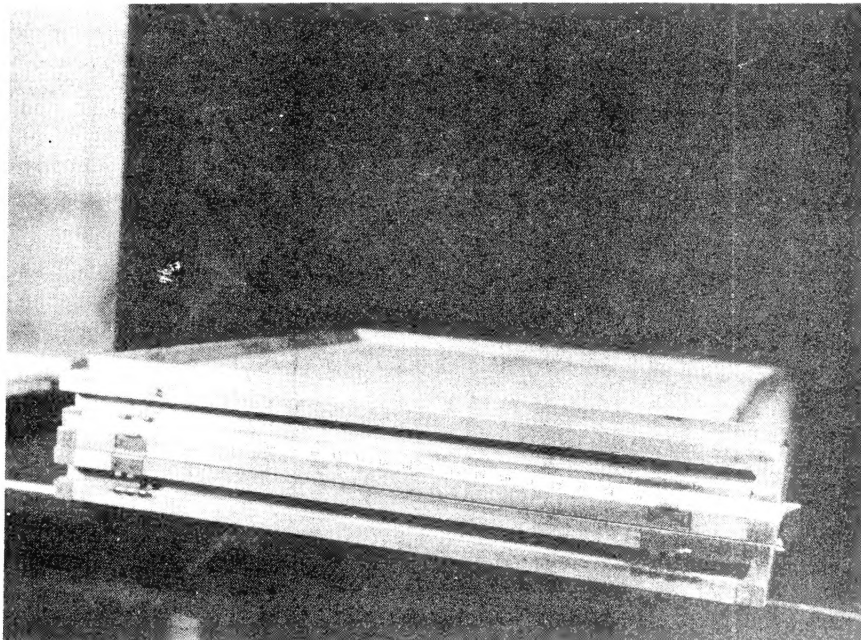


Figure 4.--Parts of field cage, assembled for transportation or storage.

